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S&P Global

Commodity Insights

Esther Ng

Senior Editor

Chemicals Asia

Asian Methanol: Green vs grey methanol - two parallel paths?

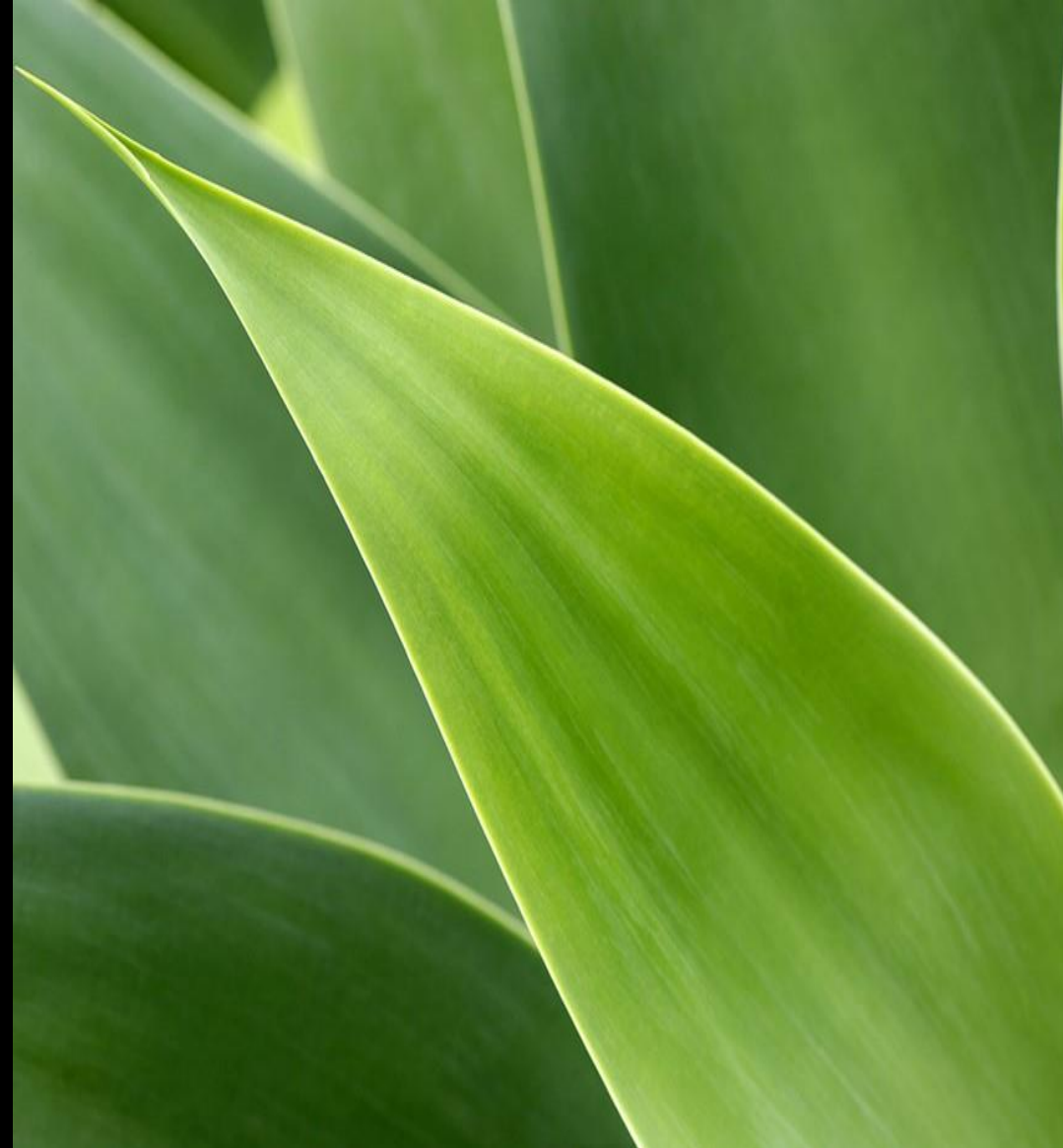
June 20, 2023



Renewable Methanol - Challenges towards net zero carbon goals

AGENDA:

- * Drivers of renewable methanol
- * Competing fuels
- * Impact of green methanol on its grey cousin
- * Asian methanol price trends in Q3 2023



Drivers of renewable methanol

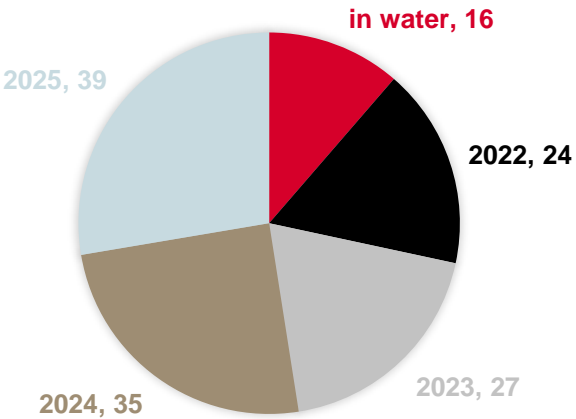


IMO 2030 goals

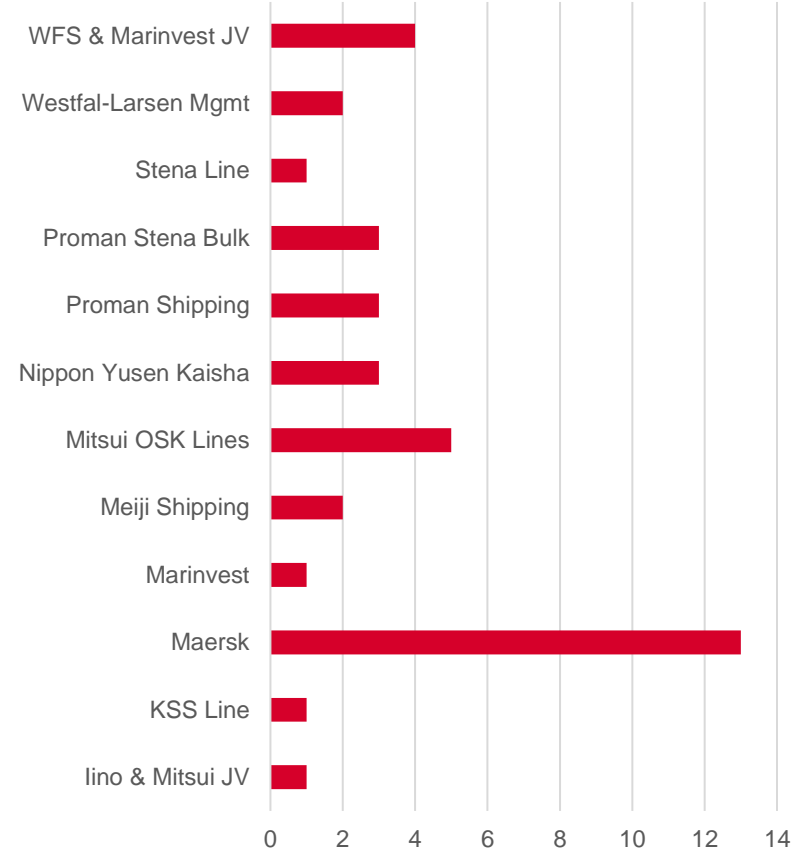
- To reduce carbon emissions of all ships by 40% by 2030 from 2008 levels.
- 50% reduction by 2050
- What is renewable methanol ?
- Allure of methanol
- Proven marine fuel – 25 vessels in service.
- Waterfront Shipping, Maersk, Proman Stena leading the way
- By 2028, around 80 methanol dual-fuel newbuilds will be delivered.
- Methanol bunkering standard in Singapore by 2024



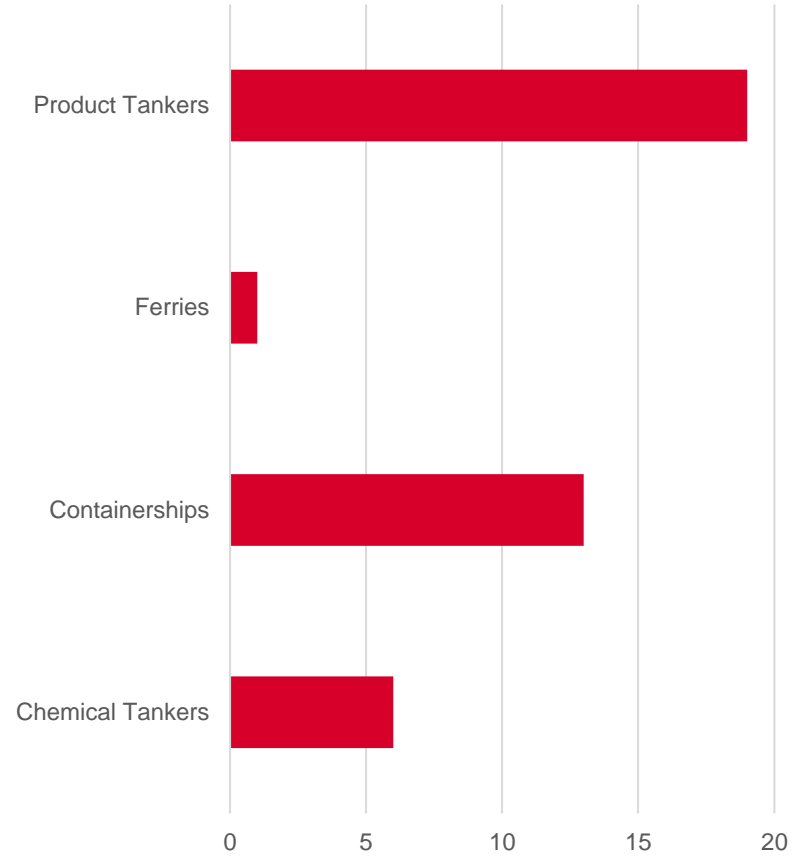
Methanol fuelled vessels



Count by Owners



Fleet Type



Source: S&P Global Commodity Insights Data

Limited infrastructure hampers fuel transition, but it shouldn't...

LNG bunkering port

- ⚠️ Planned
- ⚠️ Operational

Methanol bunkering port

- ⚠️ Planned

LPG bunkering port

- ⚠️ Operational

Hydrogen bunkering port

- ⚠️ Planned
- ⚠️ Operational



- Potentially available at over 100 ports as a marine fuel

- 47 ports have methanol storage of 50,000 mt

- 90 methanol plants globally, with combined production capacity of 110 million mt/yr

Source: Platts, Sea-LNG, WLPGA and Offshore Energy

Competing fuels



Developments in other renewable fuels

- Ammonia
- LNG
- Hydrogen
- Biofuels



Challenges in renewable methanol



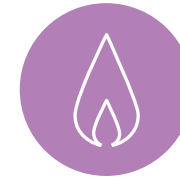
Low carbon methanol is slowly becoming a new reality for the industry

Drop-in solutions



Biogas	CCU / CCS
Implemented	Implemented / investigated
>10 units Multiple projects	5-10 units Few projects
-	-
Feedstock access & competitiveness	Location specific

Dedicated Processes



Gasification	E-methanol
Investigated	Implemented
1 unit Few projects	~5 units Multiple projects
--	--
Technology	CO2 source

Status

Development

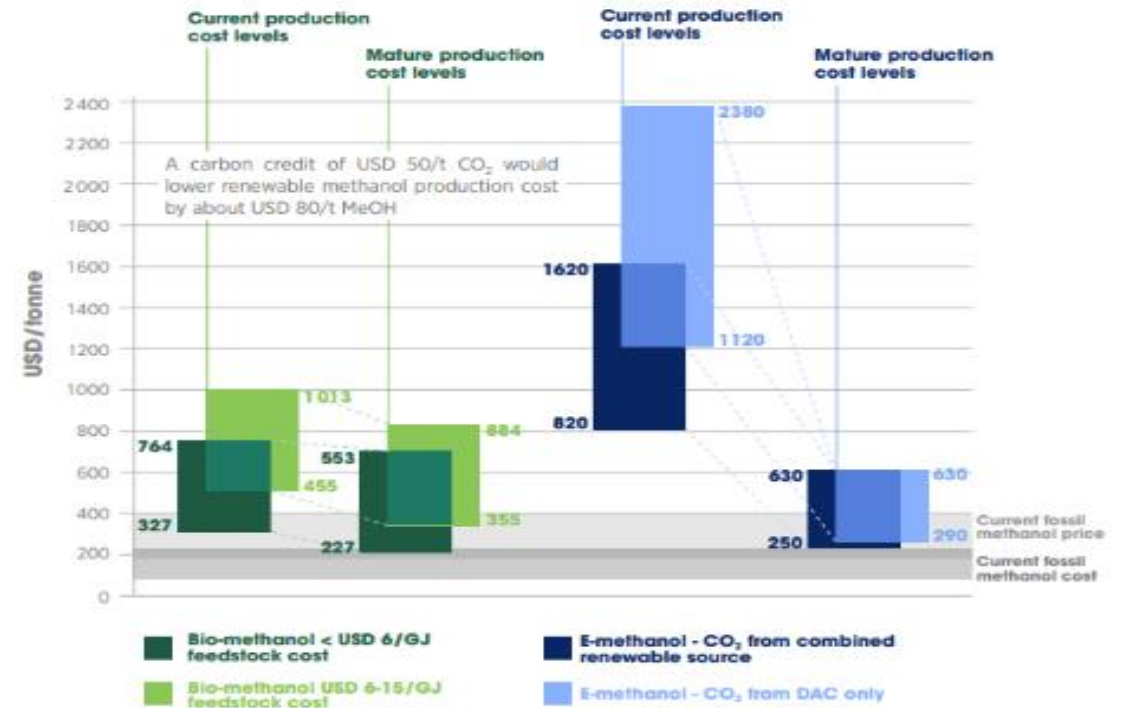
Carbon Intensity

Challenge

Renewable Methanol

- General unaffordability of green methanol given high green electricity/hydrogen costs
- Costs of green methanol in 'mature' scenario likely more competitive once hydrogen infrastructure scaled up and green electricity costs are reduced

Figure 3. Current and future production costs of bio- and e-methanol



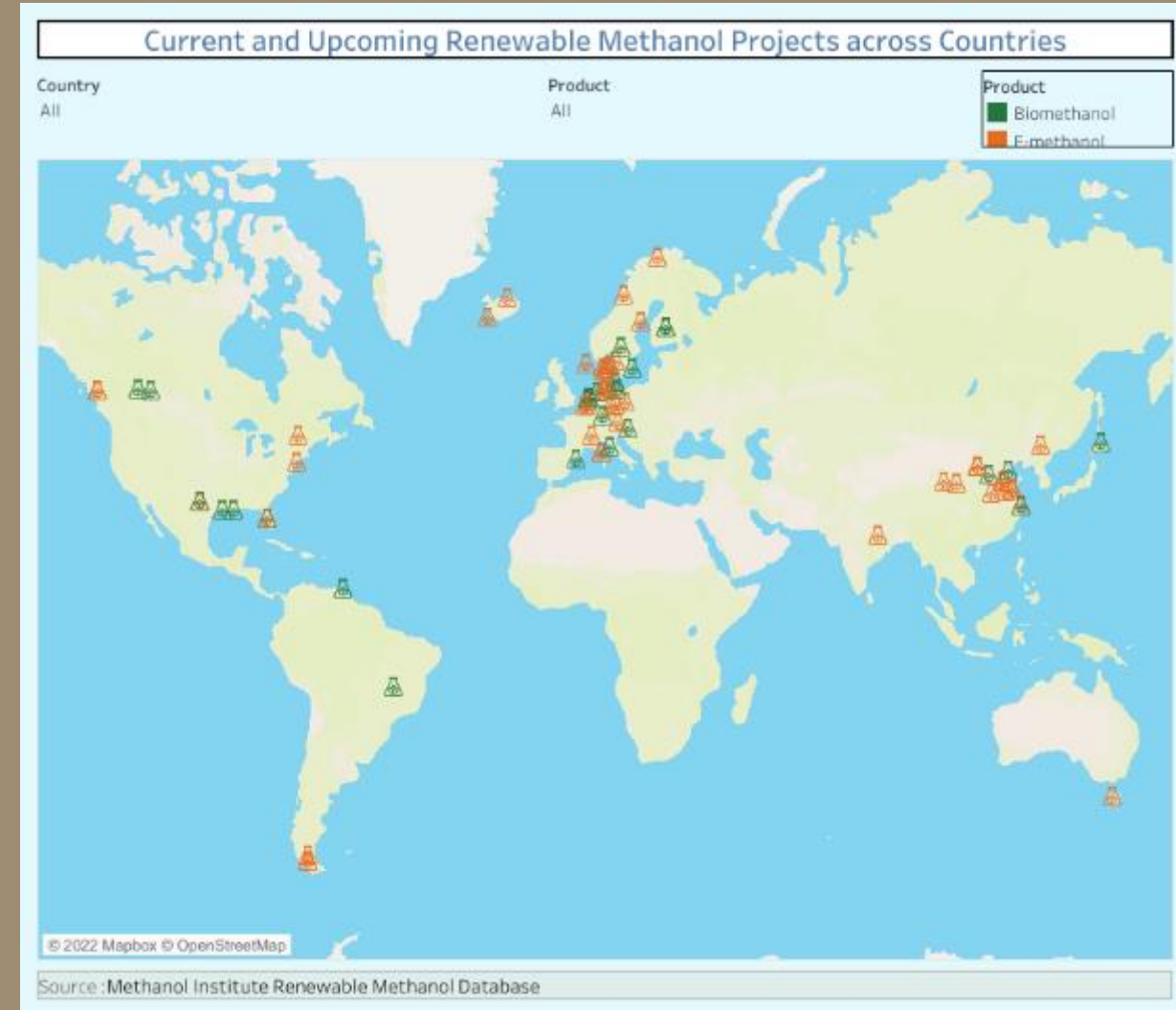
Notes: MeOH = methanol. Costs do not incorporate any carbon credit that might be available. Current fossil methanol cost and price are from coal and natural gas feedstock in 2020. Exchange rate used in this figure is USD 1 = EUR 0.9.

Source: Methanol Institute-IRENA

Challenges in increasing the uptake of renewable methanol

- High feedstock and production costs
- Low production volumes, high renewable MeOH prices
- Fuel production often far from ports
- Strong policy & regulations
- Investments/incentives throughout the supply chain

Source: MefCO2



Source: Methanol Institute

Impact of green methanol on conventional methanol demand supply



Renewable Methanol

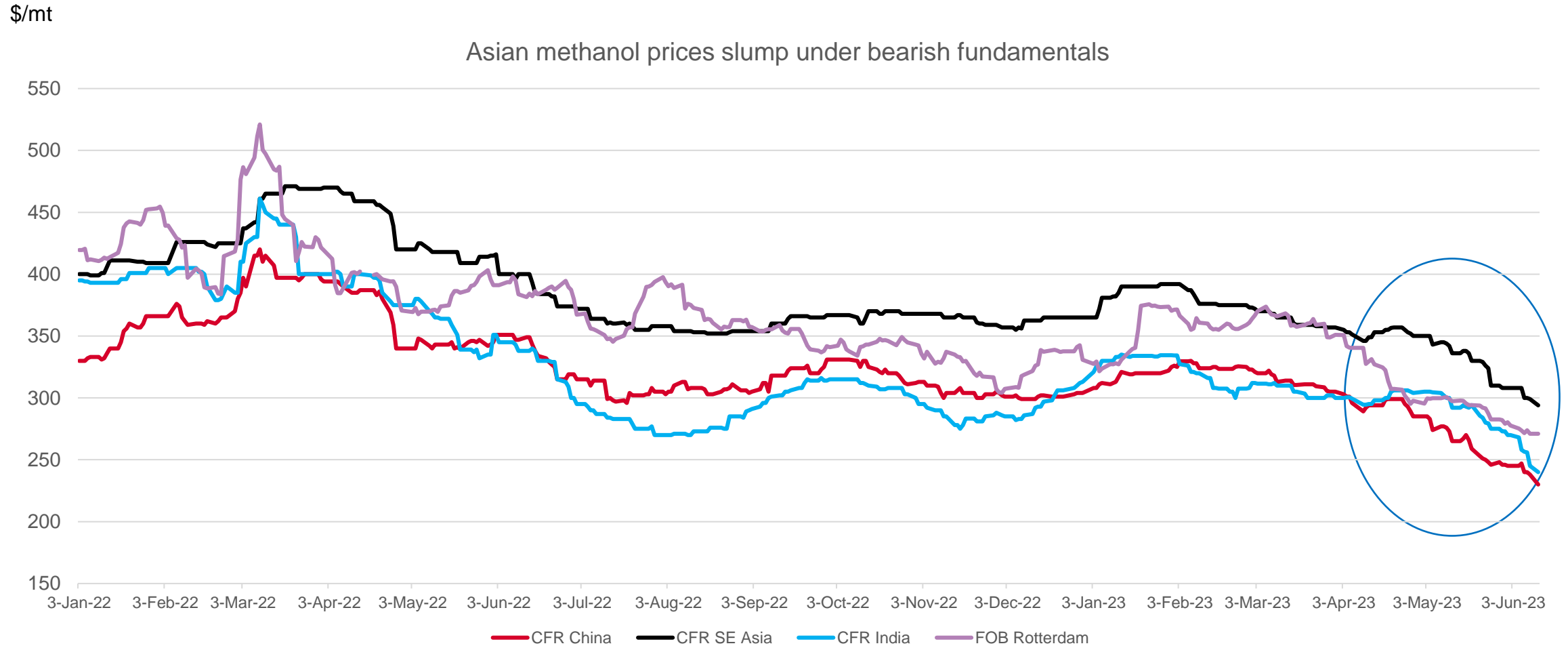
- Green methanol favoured for bunkering
- Grey methanol as a transition fuel
- Currently, not enough grey methanol to serve the needs of petrochemical users and shipping sector
- Two-tier pricing structure could emerge – petrochemical users compete with shipowners for grey methanol



Asian methanol price trends in H2 2023

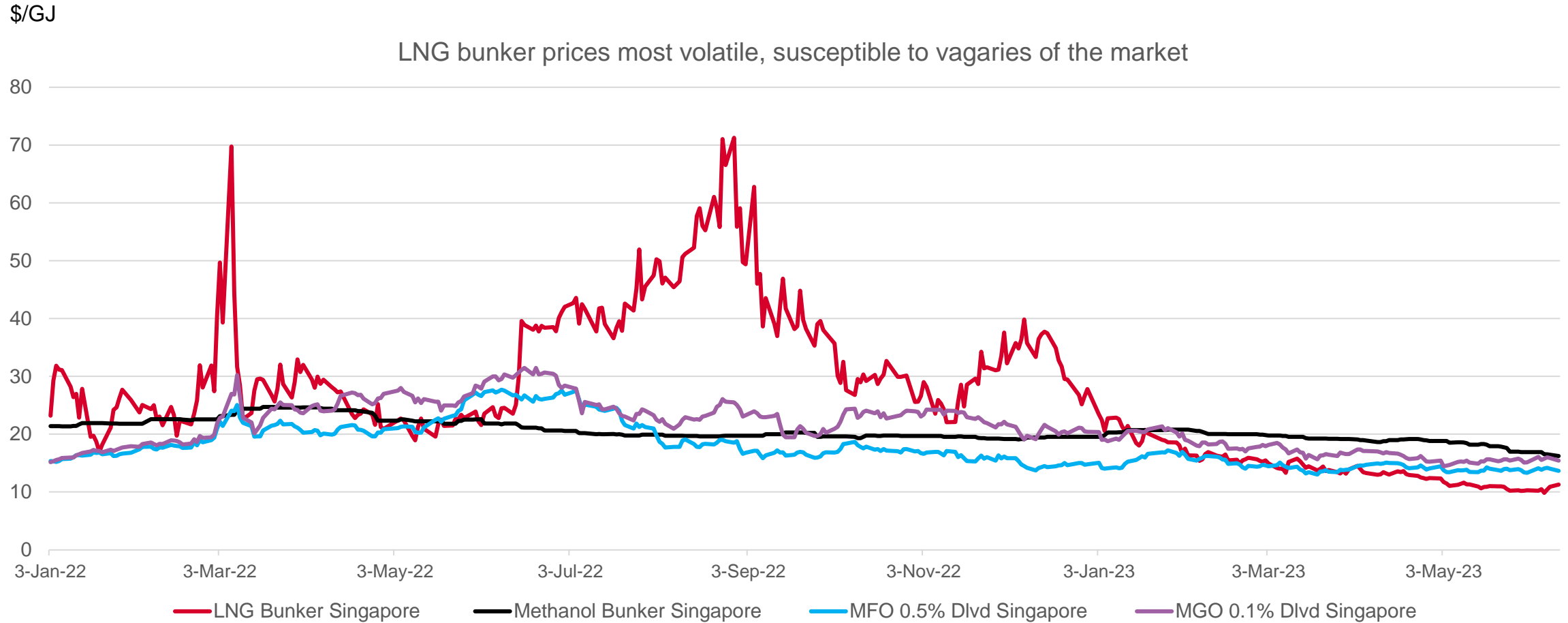


Global methanol prices in H2 2023



Source: S&P Global Commodity Insights

Singapore methanol bunkers cost by calorific value \$/GJ



Source: S&P Global Commodity Insights

Platts Singapore, Rotterdam methanol bunker prices

654--Platts Asia Methanol Bunker Daily Assessments - 16Jun23

5:47 PM • PCA

(Platts)--16Jun2023/547 am EST/0947 GMT

Methanol Bunker Singapore

	Symbol	Price	Change
\$/mt	<MLBSG00>	358.750	+2.750
\$/mt (Oil)	<MLBS000>	684.128	+5.244
\$/mt (LNG)	<MLBSL00>	867.674	+6.651

Methodology: <http://plts.co/8GJa30rEfrF>

Platts Petrochemical Master Page Index <PCA0010>

Feedback or questions? Please email pca@spglobal.com
--Platts Petrochemical Alert--

1159--Platts European Methanol Bunker Daily Assessments - 15Jun23

Yesterday, 11:56 PM • PGB

(Platts)--15Jun2023/1156 am EST/1556 GMT

Methanol Bunker Fuel Rotterdam

	Symbol	Price	Change
\$/mt	<MLBRT00>	297.270	-1.390
\$/mt (Oil)	<MLBRO00>	566.887	-2.651
\$/mt (LNG)	<MLBRL00>	718.979	-3.361

Methodology: <http://plts.co/KAsr30nmrkt>

Platts Bunker page index <PGB0850>

Feedback or questions? Please email pca@spglobal.com
--Platts Bunker Alert--

Platts launches production cost-based renewable MeOH prices

- FOB USG 500-700mt
- FOB Rotterdam 300 to 1,000 mt
- FOB Shanghai 500-1,500 mt
- Timing: 5-30 days forward
- Based on the legacy IHS Process Economics Program (PEP) formula which calculates production costs of renewable methanol, produced via electrolysis and direct air-captured carbon dioxide.
- The PEP report is available for S&P Global Connect subscribers following this link: <https://connect.ihsmarket.com/>



Summary

- Renewable methanol production far away from ports
- High production costs of renewable methanol
- Not enough conventional methanol for petrochemical and shipping industries
- Two-tier pricing structure could emerge, petrochemical users could find themselves priced out of the market



Thank You!



Platts' Global Methanol Team

Keith Mackrell
Associate Editor – US Chemicals
keith.mackrell@spglobal.com

Esther Ng
Senior Editor – Asian methanol
+65 6530 6515
esther.ng@spglobal.com

Stergios Zacharakis
Global Methanol Lead, London
+44 7976 809955
stergios.zacharakis@spglobal.com

Astrid Torres
Managing Editor – US Aromatics
+1 346 348-6875
astrid.torres@spglobal.com

Kamna Kapoor
Sr Specialist, Price Assessment,
India methanol
kamna.kapoor@spglobal.com

Sarah Trinder
Managing Editor – Europe Aromatics
+44 7866 061 716
sarah.trinder@spglobal.com

Ben Brooks
Associate Director – US Chemicals
ben.brooks@spglobal.com

Regina Sher
managing Editor, Asia Chemicals
regina.sher@spglobal.com

Ora Lazic
Sr. Market Engagement Lead
ora.lazic@spglobal.com

Maria Tsay
Chemicals Global Director
maria.tsay@spglobal.com